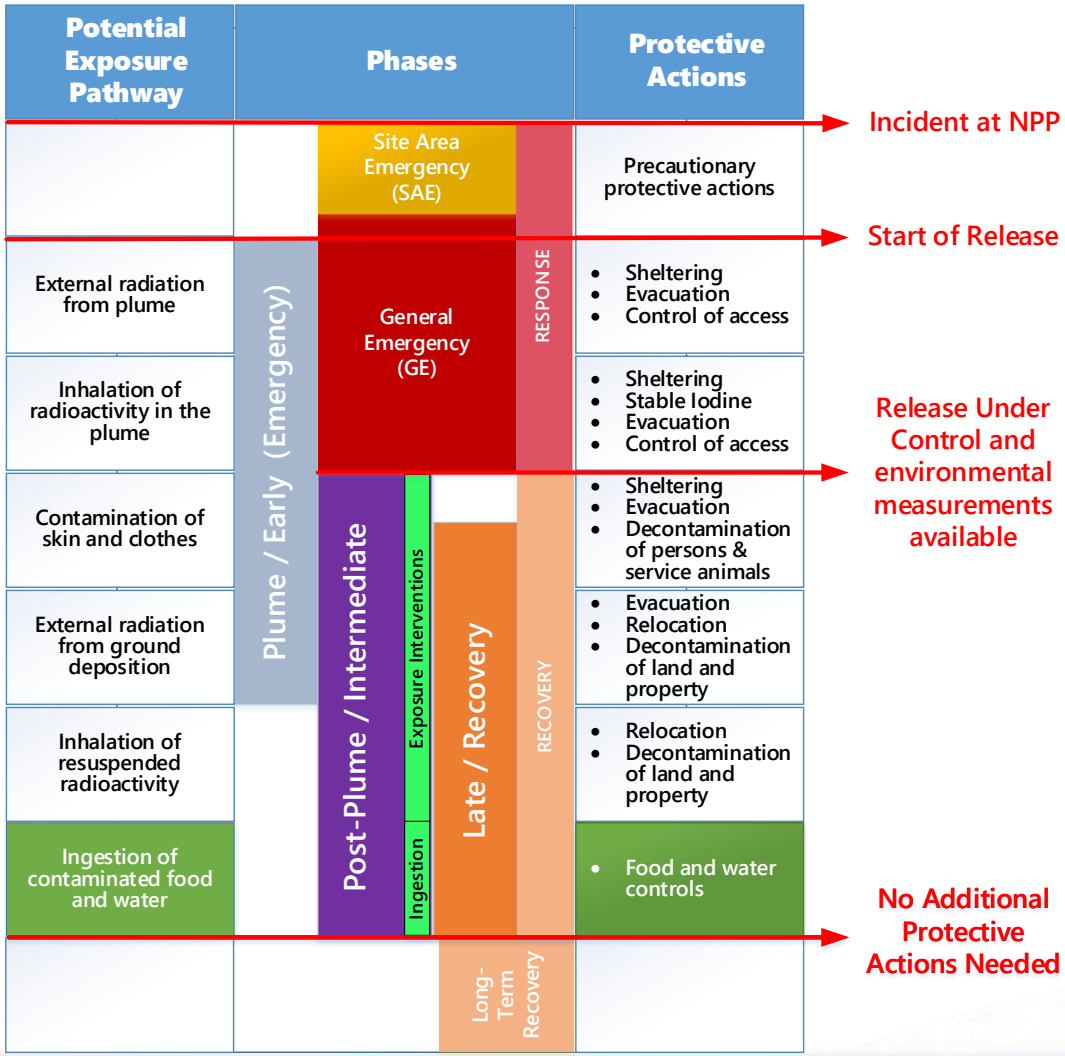
FEMA

Module Objectives

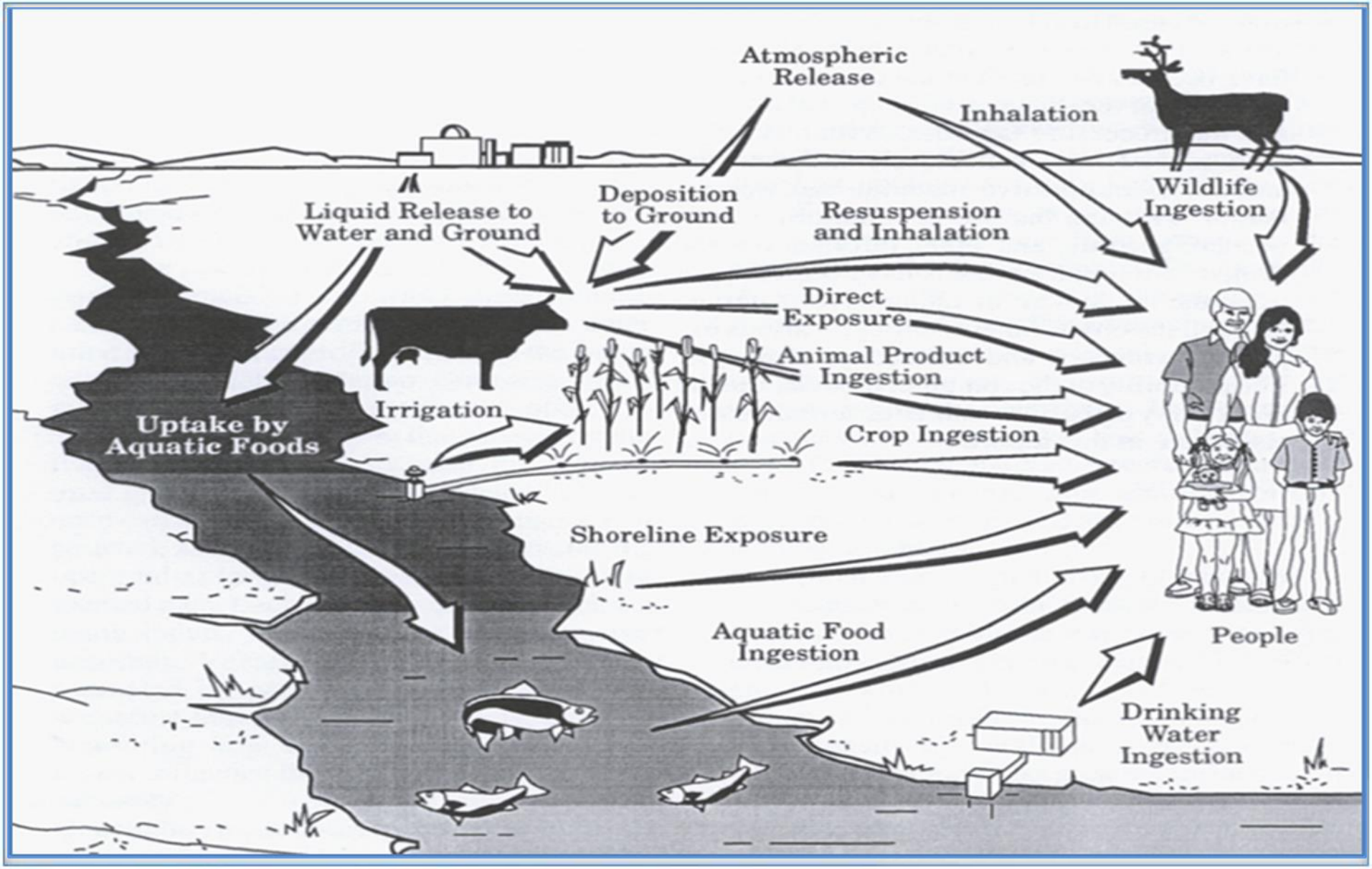
- *Characterize* the US Food and Drug Administration (FDA) Protective Action Guides (PAGs) which provide guidance to Federal, State, Tribal, and local agencies when supporting emergency response planning and implementation of protective actions associated with "Ingestion" interventions during the Post-Plume (Intermediate) phase of a radiological incident at an NRC-licensed commercial NPP.
- *Compose* planning elements related to actions and decisions to be made during the Post-Plume (intermediate) phase concerning the ingestion exposure pathway implementation of protective actions associated with interventions which address and are consistent with FDA Guidelines.

Radiological Incident Phases



Post-Plume (Intermediate) Phase – Ingestion Interventions

- The protection of the food supply from contamination of radioactive material is the top priority and actions taken to protect the food supply will be coordinated with the impacted counties during the incident.
- Protective Actions and guidelines for proper disposal of contaminated products may be coordinated through the State at the time of the incident.


Atmospheric Release
Inhalation
Liquid Release to Water and Ground
Deposition to Ground
Resuspension and Inhalation
Wildlife Ingestion
Direct Exposure
Animal Product Ingestion
Irrigation
Uptake by Aquatic Foods
Crop Ingestion
Shoreline Exposure
Aquatic Food Ingestion
People
Drinking Water Ingestion

Consumption of Radioactive Contaminated Food – FDA Recommendations

The U.S. Food and Drug Administration (FDA) has developed recommendations that health risk to the public be averted by limiting the radiation dose received as a result of consumption of contaminated food. This will be accomplished by:

(1) setting limits, called **Derived Intervention Levels** (DILs) on the radionuclide activity concentration permitted in human food, and

(2) taking protective actions to reduce the amount of contamination.

* DILs apply during the 1st year

Refer to FDA PAG Manual [1998] pgs. 4-11

Post-Plume (Intermediate) Phase – Ingestion Interventions

- The area that may be embargoed will be determined based on the conditions at the time of the incident. There is a wide variety of agricultural protective measures that may be implemented as needed and can only be defined at the time of the incident based on release conditions.
- A radiological emergency information for Farmers, Food Processors and Distributors brochure may details some of that information.
- "Blending of contaminated food with uncontaminated food is **not** permitted . . ." *FDA PAG Manual [1998] pg. 16*

❖ *See Participant Notes*

Support the Establishment of Food Control Measures - Embargoes (1 of 3)

- Food interventions within the Ingestion Counties begin with the issuing of an embargo order from the state when aerial assessment or field sampling indicates low-level contamination is outside the evacuation areas.
- An **embargo** is defined as a restriction on the commercial movement of all agricultural products (food, feed, livestock, and poultry) into, out of, or through an affected area.
- An embargo of agricultural products may affect: producers, processors, retailers, shippers and carriers.

Support the Establishment of Food Control Measures (2 of 3)

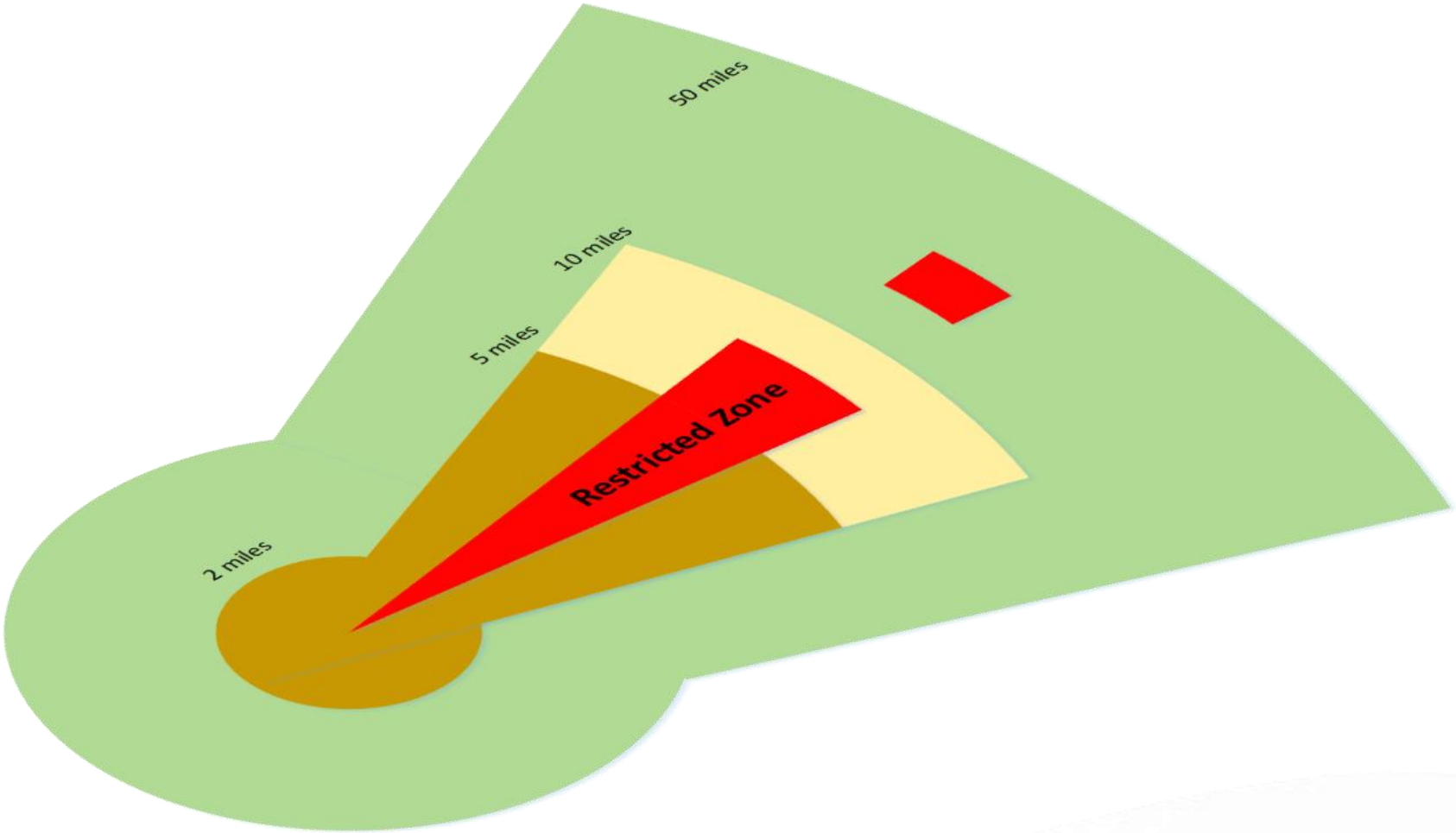
- It may not be practical to erect roadblocks around the entire affected 50-mile ingestion pathway zone due to the insurmountable requirements of manpower and equipment.
- All producers, processors, retailers, shippers and carriers will be informed through news releases and/or personal contact by applicable state agencies of the embargo and associated compliance requirements.
- Roadblock/checkpoints may be established on major transportation routes.

Support the Establishment of Food Control Measures - Assessment (3 of 3)

- Exactly what products are to be embargoed will be determined by the Radiological Assessment Team through the State based on factors including, but not limited to, the season, present and projected weather conditions, and the plume and projected plume direction.

* Note: "The DILs were based on the entire diet for each age group, not for individual foods or food groups. The calculation presumed that contamination would occur in thirty percent of the dietary intake. The value of thirty percent was based on the expectation that normally less than ten percent of the annual dietary intake of most members of the population would consist of contaminated food." *FDA PAG Manual [1998] pg. 11*

Support Establishment of Food Control Measures

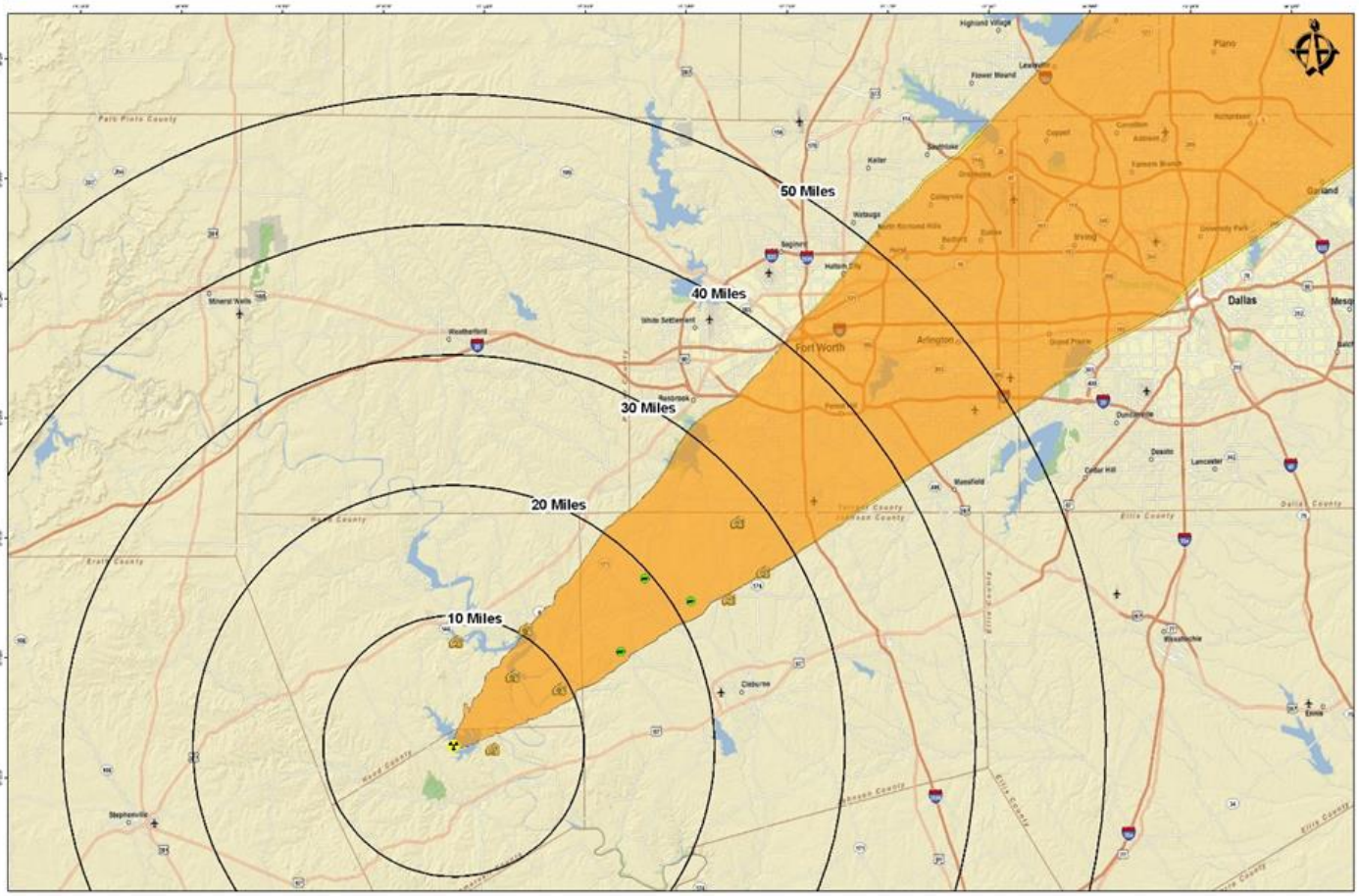


❖ *See Participant Notes*

EXERCISE

Agricultural Areas of Concern
I- 131

01
COMANCHE PEAK
GLEN ROSE, TX



Release Point
Dairy Sample Locations
Farm Sample Locations

Ingestion I-131-Food Contamination Areas of Concern
NARAC Product for I-131

> 9,200 pCi/m2
Potentially exceeds FDA Derived Intervention Level for fresh produce ready for harvest. Further analysis recommended to determine if any embargo is required.
Population : 3,658

> 7,900 pCi/m2
Potentially exceeds FDA Derived Intervention Level for milk (grass-cow-infant). Further analysis recommended to determine if any embargo is required.
Population : 3,536

Not Intended For Public Distribution

This map was produced by the Geographic Information Systems department of NNSA's Remote Sensing Laboratory (RSL) at Nellis AFB, Las Vegas, Nevada. HSIP Gold 2007, ESRI World Street Map, and FRMAC databases were used for map generation.

RSL map identification number is:
091203Embargo_I-131.mxd

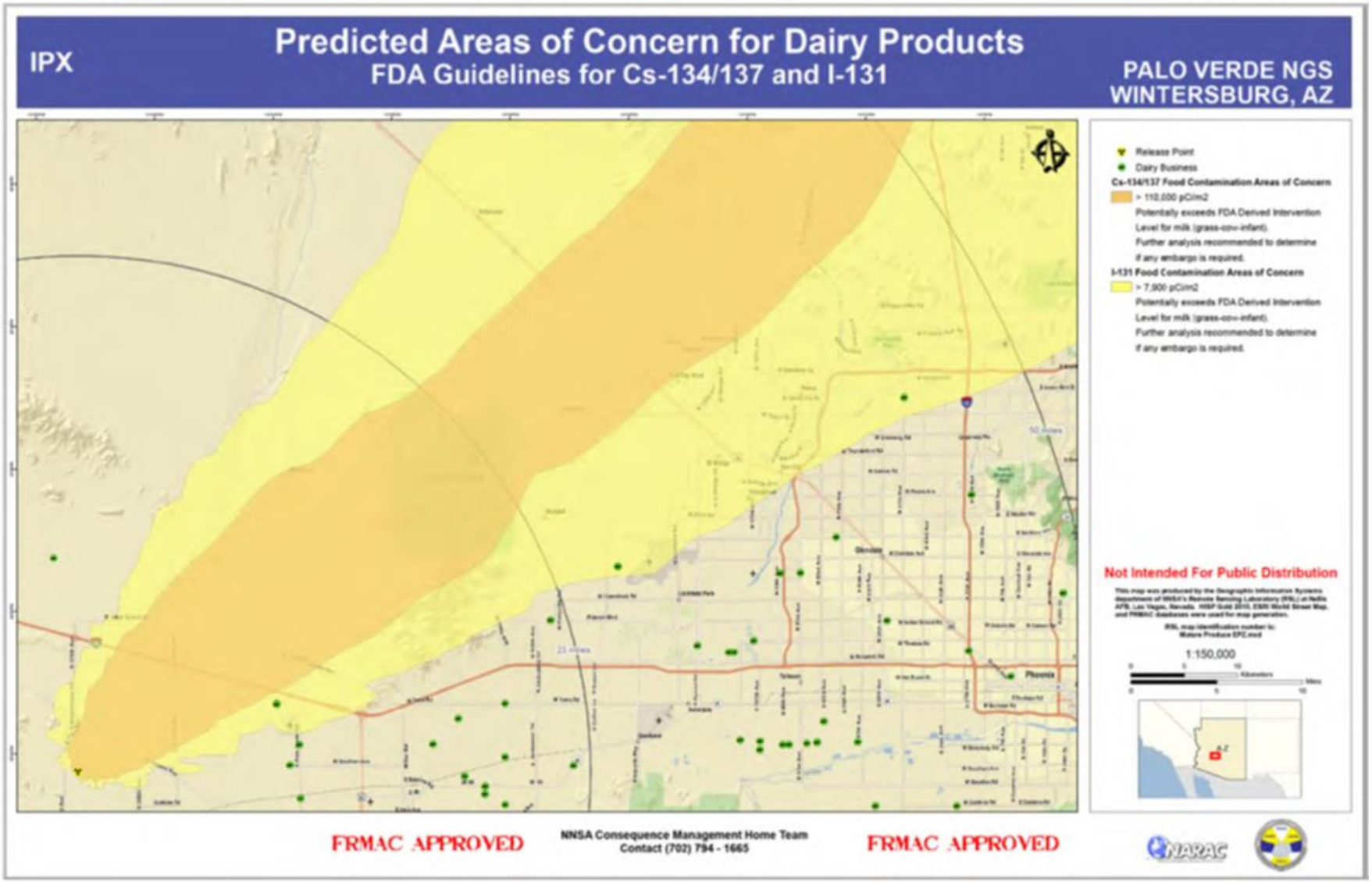
1:250,000

Map created on 3/16/2009 3:39:24 PM Pacific Standard Time
Check for revision in 12 hours

NNSA Consequence Management Home Team
Contact (702) 794 - 1665

NARAC

❖ *See Participant Notes*



❖ *See Participant Notes*

Protective Action Guidance for Drinking Water (1 of 3)

- "The purpose of the protective action for the drinking water exposure pathway is to restrict the use of contaminated water for drinking and to provide recommendations for local communities to consider in providing alternative drinking water for the affected community during a nationally significant radiological incident, such as a disaster at a nuclear power plant, an RDD or an IDD."
- "This guidance does not in any way affect public water systems' compliance obligations under applicable NPDWRs promulgated under the Safe Drinking Water Act (SDWA)."

Refer to EPA PAG Manual [2017] "Protective Action Guidance for Drinking Water" § 4.6 pg. 53-66)

❖ *See Participant Notes*

Protective Action Guidance for Drinking Water – Two-Tier Drinking Water PAG (2 of 3)

EPA recommends a two-tier drinking water PAG for use during the intermediate phase following a nationally significant radiation incident:

- **500mrem** (5 mSv or **0.5 rem**) projected dose, for one year, to the **general population** (defined as anyone over age 15, excluding pregnant women and nursing women),
- **100 mrem** (1 mSv or **0.1 rem**) projected dose, for one year, to the most sensitive populations (e.g., infant, children (age 15 and under), pregnant women, and nursing women.

Refer to EPA PAG Manual [2017] "Protective Action Guidance for Drinking Water" § 4.6 pg. 53-66)

Protective Action Guidance for Drinking Water – Blending Water Sources (3 of 3)

"If a source of uncontaminated water is available, a water system may choose to blend water from contaminated and uncontaminated sources of drinking water to minimize radiation doses from drinking water. The water may be blended using storage tanks or a common header to allow for complete mixing prior to distribution to customers."

Refer to EPA PAG Manual [2017] "Planning and Taking Action" § 4.6.5 pg. 61)

Transition and Summary

- **Module 5.0** provided guidance to Federal, State, Tribal, and local agencies when supporting emergency response planning and implementation of protective actions associated with "Ingestion" interventions during the Post-Plume (Intermediate) phase of a radiological incident at a NRC-licensed commercial NPP.
- **Module 6.0** will describe and identify the recovery strategies, coordination and communication conducted by State and local agencies with Federal resources during the Late Phase of a radiological incident at a NRC-licensed commercial NPP.